

# The Bean Bag

A newsletter to promote communication among research scientists concerned with the systematics of the Leguminosae/Fabaceae

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## FROM THE EDITOR

Barbara Mackinder

*The Bean Bag* is designed to promote communication among research scientists concerned with legume systematics. To achieve this goal *The Bean Bag* is issued each year and features six columns: From the Editor, News (meetings, major events, announcements, etc.), Latin American Legume Report (nothing to report this year), Nodulation and Nitrogen Fixation, Gleanings, and Recent Legume Literature. Data in the Gleanings column are derived from questionnaire sheets which Readers complete and return. If you have news about legume systematics, send it to us for this column. The Recent Legume Literature column contains published research papers of specific interest to *Bean Bag* Readers and is derived from Readers contributions in conjunction with references from *The Kew Record* (RBG Kew's current awareness list of taxonomic literature). Recent is defined as up to 18 months old. Specific interest to *Bean Bag* Readers is defined as research papers of interest to a worldwide group of legume systematic botanists.

*Bean Bag* Readers are encouraged to send notices, observations, etc.

*The Bean Bag* can be delivered to readers via e-mail. If you wish to have your copies e-mailed to you, please send an email message to the editor (email: [B.Mackinder@rbgkew.org.uk](mailto:B.Mackinder@rbgkew.org.uk)). Will new readers please provide their title, first and last names, full postal address and area(s) of interest?

Electronic copies of the current and past issues of *The Bean Bag* can be viewed on the World Wide Web server of the Royal Botanic Gardens, Kew, UK at <http://www.rbgkew.org.uk/herbarium/legumes/beanbag.html>

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## NEWS

### The Rupert Barneby Award

James L. Luteyn

The New York Botanical Garden is pleased to announce that Vidal de Freitas Mansano, of the Instituto de Pesquisas Jardim Botânico do Rio de Janeiro, and Benjamin M. Torke, currently a graduate student in the Department of Biology, Washington University, St. Louis, are the joint recipients of the Rupert Barneby Award for the year 2005. They will be studying the systematics and diversification of *Swartzia* (Leguminosae, Papilionoideae, Swartzieae), a prominent neotropical tree genus of approximately 140-180 species, with species diversity concentrated in lowland rainforests of the Guianas and Amazonia.

The New York Botanical Garden now invites applications for the Rupert Barneby Award for the year 2006. The award of US\$ 1,000.00 is to assist researchers to visit The New York Botanical Garden to study the rich collection of Leguminosae. Anyone interested in applying for the award should submit their curriculum vitae, a detailed letter describing the project for which the award is sought, and the names of 2-3 referees. Travel to the NYBG should be planned for sometime in the year 2006. The application should be addressed to Dr. James L. Luteyn, Institute of Systematic Botany, The New York Botanical Garden, 200<sup>th</sup> Street and Kazimiroff Blvd., Bronx, NY 10458-5126 USA, and received no later than December 1, 2005. Announcement of the recipient will be made by December 15<sup>th</sup>.

Anyone interested in making a contribution to THE RUPERT BARNEBY FUND IN LEGUME SYSTEMATICS, which supports this award, may send his or her cheque, payable to The New York Botanical Garden, to Dr. Luteyn.

### The future of *Acacia*

Barbara Mackinder

A mere four legume genera contain more than a quarter of the ca 19300 known species of Leguminosae. One of these generic giants is *Acacia* with ca 1450 spp. (second only to *Astragalus* comprising ca 2400 spp.). Doubt long cast by morphological studies that *Acacia* as it is traditionally circumscribed (*Acacia sens. lat.*) is not a natural assemblage of species has been confirmed by numerous recently published analyses utilising molecular data. Some members of *Acacia sens. lat.* form a well supported group embedded within tribe Ingeae and another set of *Acacia* species are more closely related to tribe Mimoseae. It is probable that at least five generic segregates will be required to accommodate the species groupings identified within *Acacia sens. lat.* Clearly, only one of these generic segregates can retain the name *Acacia*. Species assigned to the other segregate genera will incur name changes, no longer being *Acacia* species. Under current International Code of Botanical Nomenclature rules, the name *Acacia* will go with species of the generic segregate *Acacia* subgenus *Acacia*. This newly more strictly circumscribed *Acacia* comprises ca 180 spp. and is widely distributed across all three main tropical regions, Central and South America, Africa and southern Asia, extending to north and north-eastern Australia. Other African species of *Acacia sens. lat.* which do not belong to subgenus *Acacia* will be assigned to another generic segregate and will incur a name change.

However, Orchard & Maslin (2003) have put forward a proposal (1584) to the Spermatophyte Committee that the name *Acacia* should be applied (by means of selecting a new type) to the much larger (ca 970 spp.) generic segregate *Acacia* subgenus *Phyllodineae* which contains the phyllodinous Acacias. *Acacia* subgenus *Phyllodineae* is largely confined to Australia with a handful of species in SE Asia and two in Madagascar. The committee responsible for considering the proposal has voted in its favour but the final decision over the future of the name *Acacia* will be taken when participants vote on proposal 1584 at the International Botanical Congress (IBC) in Vienna in July 2005. This summer the botanical community must in essence decide the following: In future should *Acacia* either be a name used for a moderate sized pantropical genus or for a much larger Australian one? Described here is a simplified synopsis of a more complicated debate. Detailed arguments in favour of retypification can be found in Orchard & Maslin (2003)<sup>1</sup> and Brummitt (2004)<sup>2</sup>. The case refuting the need for retypification is given in Walker and Simpson (2003)<sup>3</sup>. Luckow (with various collaborators) have submitted to *Taxon*, a counter argument to proposal (1584) which should be published prior to the Vienna Congress.

1. Orchard A.E and B.R. Maslin. 2003. (1584) Proposal to conserve the name *Acacia* (Leguminosae: Mimosoideae) with a conserved type. *Taxon* 52(2): 362-363.
2. Brummitt, R.K. 2004. Report of the Committee for Spermatophyta: 55. Proposal 1584 on *Acacia*. *Taxon* 53(3): 826-829.
3. Walker, J. and J. Simpson. 2003. An alternative view to ICBN Proposal 1584 to conserve the name *Acacia* (Leguminosae: Mimosoideae) with a conserved type. *Australian Systematic Society Newsletter* 117: 17-21.
4. Luckow et al. *Acacia*: the case against moving the type to Australia. Submitted to *Taxon*.



## Legumes of the World

Gwilym Lewis

A new book, *Legumes of the World* edited by Gwilym Lewis, Brian Schrire, Barbara Mackinder and Mike Lock is to be published in July 2005 and is the first authoritative, illustrated guide to the world's legume genera. All 727 genera are illustrated, some for the first time with over 1100 photographs, paintings and line drawings. The introductory chapters cover nomenclature, classification including a supertree of the family, advances in systematics since Polhill (1994), economic importance of the family, complete synopsis of the genera and an overview of legume biogeography. The 36 tribal accounts have been prepared by 20 legume experts and are arranged in the most up to date classification system. For each genus, number of species, geographical distribution, etymology, habit, ecology, economic uses and selected references are given.

*Legumes of the World* will be published by the Royal Botanic Gardens, Kew and will be available from [www.kewbooks.com](http://www.kewbooks.com) ISBN 1 900347 80 6. 604pp. Recommended retail price is £45.00 (specification and price may be subject to change).

## Los Géneros de Leguminosas del Norte de México (The Genera of Legumes of Northern Mexico) by A. Eduardo Estrada C. and Alfonso Marínez M.

Barney Lipscomb

This abundantly illustrated monograph is the most comprehensive generic treatment of legumes for any geographical area of Mexico. The book covers the genera of legumes known to be present in northern Mexico from Tamaulipas to Baja-California Sur. The introductory material covers topography, climate and vegetation types of northern Mexico.

Included are 121 genera treated in three families: Fabaceae, Mimosaceae, and Caesalpiniaceae. The Fabaceae is the most abundant family with 87 genera followed by Mimosaceae (19) and Caesalpiniaceae (15). Keys to the families, tribes (only in Fabaceae), and genera are included. Detailed line drawings of distinguishing characteristics are included for most of the genera to facilitate identification. Each genus is provided with a description, followed by distributional information, species number, chromosome number, and economic, ecological and potential food importance.

Sida, Bot. Misc. No. 25, 2004. ISSN 0833-1475. ISBN 1-889878-13-8. 134 pp. \$25 + p&p. Available from: Botanical Research Institute of Texas, 509 Pecan Street, Forth Worth, TX 76012-4060, USA. E-mail: [sida@brit.org](mailto:sida@brit.org) Fax: 1-817-332-4112 [www.brit.org/sida/sidaBotMis.htm](http://www.brit.org/sida/sidaBotMis.htm)

## Albertoa, a new series dedicated to the Fabales

Angela Vaz

*Albertoa*, a periodical from Rio de Janeiro, Brazil and edited by Pedro Carauta, announces a new series dedicated to the Fabales. This new series, is intended to be semestral and will publish papers and brief notes referring to order Fabales. Fascicle number one is now being distributed. Address for correspondance: *Albertoa*: Pedro Carauta, Caixa Postal 34031, Rio de Janeiro, RJ 22460-970, Brasil.

## The Drift-Seed of *Mora oleifera* (Triana) Ducke

H.D.L. (Tom) Corby

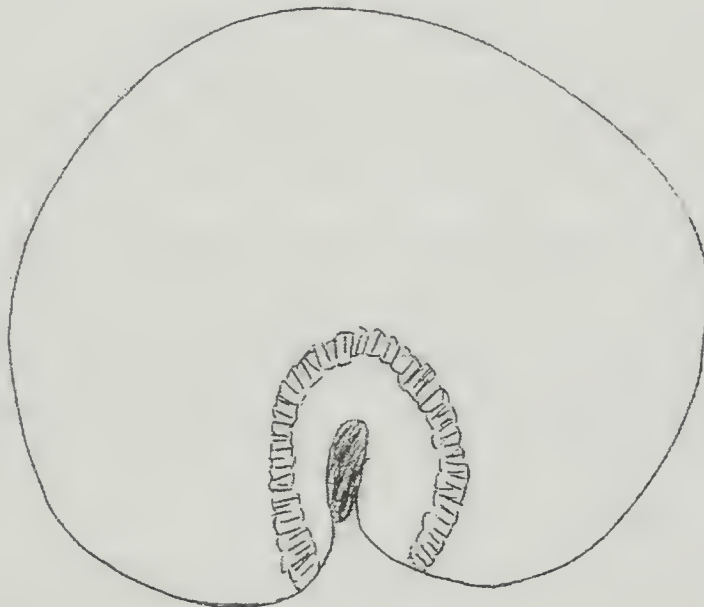
In response to an appeal in *The Bean Bag* for seed of *Mora oleifera*, a single fresh seed, said to be of average size, arrived by air from Costa Rica.

The seed had a flaking chartaceous seedcoat. The hard-fleshed, pale orange cotyledons were firmly adherent at the edges, concave internally, with the inner surface warty and prominently veined. The axis was well-developed. With a relative bulk-density of <1, it clearly had the buoyancy befitting a drift-seed.

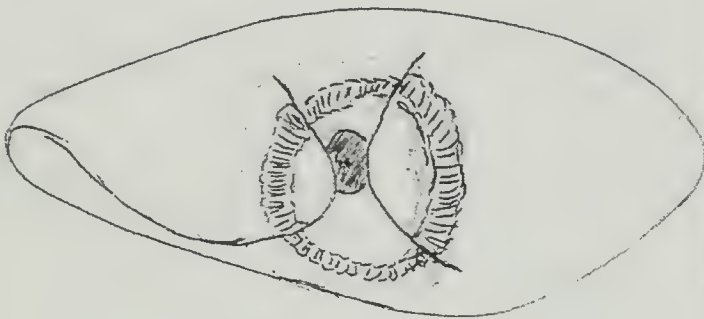
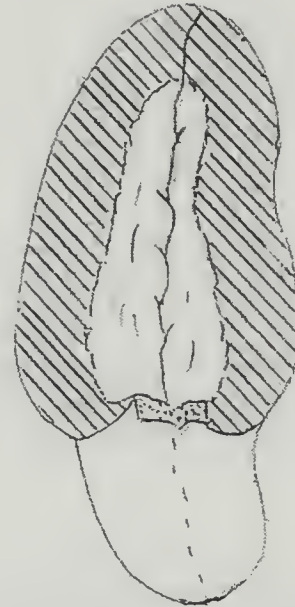
Allen & Allen (1981)<sup>1</sup> describe the seed as the largest dicotyledonous, and leguminous, seed known, used locally to make a dark red dye. Gunn et al. (1976)<sup>2</sup> describe the seed as 1-2 seeded, seldom more than 25 cm. long.

I am grateful to Dr Barry Hammel for the seed, to Dr David Smith for determining the nature of the cotyledons, and to Professor Janet Sprent for the nitrogen-determinations.

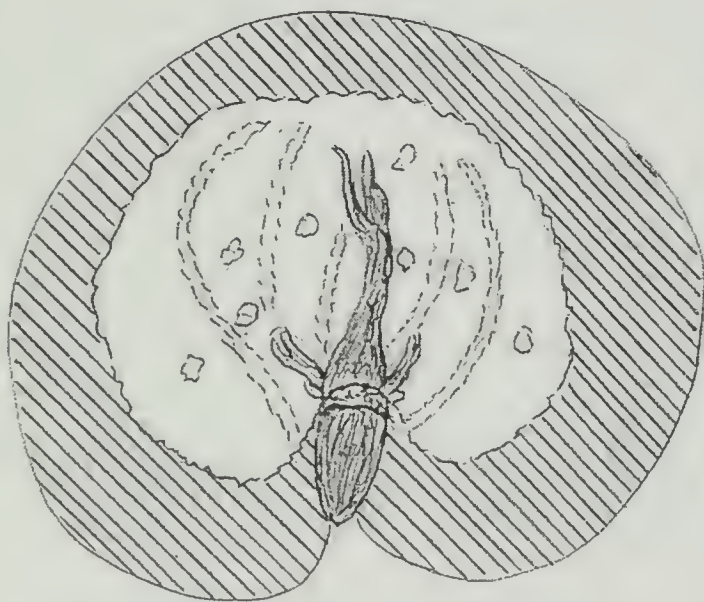
1. Allen, O.N. and Allen, E.K. 1981. *The Leguminosae: A Source Book of Characteristics, Uses, and Nodulation*. Madison: University of Wisconsin Press.
2. Gunn, R.R., Dennis, J.V., and Paradine, P.J. 1976. *World Guide to Tropical Drift Seeds And Fruits*. New York: Quadrangle/New York Times Book Co.



HDL CORBY



10 CM



*Mora oleifera* (Triana) Ducke  
= *M. megistosperma* (Pittier)  
Britton & Rose

*Source*

Corcovado National Park, Costa Rica.  
River estuary.

*Collector*

B. Hammel, No. 18373 of 07/10/91.

*Features*

Reniform/lensoid, exendospermic,  
with endopolyloid Form 4  
cotyledons. Slightly  
misshapen.

*Size*

17 x 14 x 7.5 cm.  
Whole seed: 709 cm<sup>3</sup>. Cavity: 199 cm<sup>3</sup>.

*Weight*

Fresh: 645 g. Dry: 334g.

*Nitrogen-content (dry-matter basis)*

Seedcoat, 1.62%, cotyledons, 0.53%,  
axis, 0.93%.

*Buoyancy*

Bulk density: 0.91 g/cm<sup>3</sup>.



NODULATION AND NITROGEN FIXATION  
(Legume Nodulation reports not in Allen and Allen (1981))

Joseph H. Kirkbride, Jr.

Taxon	Status <sup>1</sup>	Source <sup>2</sup>
<i>Anthyllis henoniana</i> Batt.	+	5
<i>Astragalus gombo</i> Bunge subsp. <i>gomboeformis</i> (Pomel) Eug. Ott	+	5
<i>Calliandra haematomma</i> (DC.) Benth. var. <i>locoensis</i> (R.G. García & Kolterman) Barneby	+	6
<i>Caragana ambigua</i> Stocks	+	3
<i>Ebenus stellata</i> Boiss.	-	3
<i>Erythrina lanata</i> Rose	+	1
<i>Hedysarum glomeratum</i> F. Dietr.	+	2
<i>Hippocrepis bicontorta</i> Loisel.	+	4
<i>Lathyrus numidicus</i> Batt.	+	4
<i>Lonchocarpus atropurpureus</i> Benth.	+	3
<i>Lonchocarpus eriocarinalis</i> Micheli	+	1
<i>Lotus roudairei</i> Bonnet	+	5
<i>Onobrychis dealbata</i> Stocks	+	3
<i>Ononis natrix</i> L. subsp. <i>filifolia</i> (Murb.) Sirj.	+	5
<i>Piptadenia flava</i> (Spreng. ex DC.) Benth.	+	6
<i>Vicia monantha</i> Retz. subsp. <i>monantha</i>	+	3

<sup>1</sup> Status: +, root nodules reported as present; -, root nodules reported as absent.

<sup>2</sup> Source:

1. Altamirano-Hernández, J., R. Fariás-Rodríguez, V.J. Jaramillo, and J.J. Peña-Cabriales. 2004. Seasonal variation in trehalose contents of roots and nodules of leguminous trees in a tropical deciduous forest in Mexico. *Soil Biology and Biochemistry* 36: 869–871.
2. Benhizia, Y., H. Benhizia, A. Benguedouar, R. Muresu, A. Giacomini, and A. Squartini. 2004. Gamma protobacteria can nodulate legumes of the genus *Hedysarum*. *Systematic and Applied Microbiology* 27: 462–468.
3. Mahmood, A., and R. Qadri. 2004. A qualitative study of the nodulating ability of legumes of Pakistan – list 6. *Pakistan Journal of Botany* 36(1): 167–171.
4. Parker, M.A. 2004. rDNA and dnaK relationships of *Bradyrhizobium* sp. nodule bacteria from four papilionoid legume trees in Costa Rica. *Systematic and Applied Microbiology* 27: 334–342.
5. Zakhia, F., H. Jeder, O. Domergue, A. Willems, J.-C. Cleyet-Marel, M. Gillis, B. Dreyfus, and P. de Lajudie. 2004. Characterisation of wild legume nodulating bacteria (LNB) in the infra-arid zone of Tunisia. *Systematic and Applied Microbiology* 27: 380–395.
6. Zurdo-Piñero, J.L., E. Velázquez, M.J. Lorite, G. Brelles-Mariño, E.C. Schroder, E.J. Bedmar, P.F. Mateos, and E. Martínez-Molina. 2004. Identification of fast-growing rhizobia nodulating tropical legumes from Puerto Rico as *Rhizobia gallicum* and *Rhizobia tropici*. *Systematic and Applied Microbiology* 27: 469–477.

## GLEANINGS

ANULOV is creating a bank of legume galactomannans. She needs any leguminous seeds for research and offers reprints and seeds.

BANKS has successfully defended her PhD study on the pollen of caesalpinoid legumes, and completed a further study of the pollen of related families Surianaceae and Quillajaceae (in press Review of Palaeobotany and Palynology). A paper examining pollen development in *Duparquetia* has also been submitted (Annals of Botany). Work being undertaken to examine the pollen of Polygalaceae (putative sister group of Leguminosae) is at an advanced stage and being prepared for publication.

BRETELER is studying *Anthonotha sens. lat.* A paper transferring two species (*A. gabunensis* and *A. conchyliophorum*) to the monotypic genus *Englerodendron* will be submitted to Adansonia shortly.

BRETELER and Issembe are undertaking a preliminary revision of *Tessmannia*. They plan a full revision in the future and will describe several new species.

BRETELER and N. Nguema are revising the African species of *Crudia* (11 species of which 3 are described as new). It is expected that the revision will be completed this year.

BRETELER and D. Obiang have almost completed a revision of *Eurypetalum* reducing the three species recognized currently to two. The revision will be submitted to Adansonia.

CANE (USDA-ARS Bee Biology and Systematics Lab, Utah State University, Logan, UT 84322-5310 USA) is studying the breeding biologies and pollination requirements of several legumes from the Great Basin desert and adjacent Snake River Plains of the western US. The species are: *Astragalus filipes*, *Dalea ornata*, *D. searlsiae* (and *D. purpurea* as a surrogate), *Hedysarum boreale*, and *Lupinus argenteus*. Large, affordable quantities of seed of these species are desired by federal land management agencies for rehabilitating degraded rangelands. If the program is successful, then seed of these species will be grown and sold by private growers of native grass and wildflower seed.

IOCCHI invites you to look at his website [www.trifolium.it](http://www.trifolium.it) which gives information about the tribe Trifolieae from Central Italy. A database including systematic, genetic, biogeographic and ecological data is available to download,

KIRKBRIDE, L. Gilbert, and WIERSEMA submitted their database of legume nodulation reports to USDA Agricultural Research Service for publication, and it was accepted. The scientific names of all taxa have now been incorporated into the USDA, ARS Germplasm Resources Information Network (GRIN), but work has not yet begun on including the references. Hopefully the database will be available in 2005. There are now nodulation records for 4,671 legume species and infraspecific taxa in the database. E-mail: [joe@nt.ars-grin.gov](mailto:joe@nt.ars-grin.gov)

KIRKBRIDE and WIERSEMA have submitted a proposal to conserve *Centrosema pubescens* Benth. with a conserved type (Antigua, Gracehill, 1858, Wulfschlägel 129 [BR]). In 1996, Fantz demonstrated that the correct name for the widely distributed and frequently cultivated forage legume in the humid tropics is *C. molle* Mart. ex Benth., not *C. pubescens*. If their proposal is accepted, *C. pubescens* will continue to be used for the forage legume, and *C. molle* will become a synonym of *C. pubescens*. E-mail: [joe@nt.ars-grin.gov](mailto:joe@nt.ars-grin.gov)

Pasquet is collaborating with VAN DER MAESEN in the preparation of an account of *Vigna* in Benin.

VAN DER MAESEN continues his work on *Flemingia* and other Cajaninae and is close to completing an account of Leguminosae for the Flora of Benin.

VANDERBORGHT, Dr Thierry is maintaining a Phaseoleae-Phaseolinae collection, chiefly centred on wild *Phaseolus* and *Vigna* species. List of taxa is available as a PDF file located at the following address:  
<http://www.br.fgov.be/RESEARCH/COLLECTIONS/LIVING/PHASEOLUS/>

WIERINGA wishes to inform readers of the collection of silica-dried leaf or flowering vouchered specimens of Leguminosae (and other families) held at the Wageningen Branch of the National Herbarium of the Netherlands. A list of specimens with associated silica-dried material and the conditions under which they may be supplied to interested researchers can be found under the heading "DNA samples" at: [http://www.dpw.wur.nl/biosys/herbarium-vadense\\_uk.html](http://www.dpw.wur.nl/biosys/herbarium-vadense_uk.html)



## RECENT LEGUME LITERATURE

Ed. Note: Every effort has been made to ensure authors' names are correctly cited but please notify the editor if your name is misspelled. Authors names in all capital letters are *Bean Bag* Readers.

AINOUCHE, A., R.J. Bayer and M.T. Misset. 2004. Molecular phylogeny, diversification and character evolution in *Lupinus* (Fabaceae) with special attention to Mediterranean and African lupines. *Pl. Syst. Evol.* 246(3-4): 211-222. Molecular systematics.

Akan, H. and Z. Aytac. 2004. *Astragalus ovabaghensis* (Fabaceae), a new species from Turkey. *Ann. Bot. Fenn.* 41(3): 209-212. Icones, Maps, Anatomy and morphology, Keys.

Ali, S.I. 2004. (1615) Proposal to reject the name *Mimosa cinerea* (Leguminosae). *Taxon* 53(1): 206-207.

Allan, G.J., J. Francisco Ortega, A. Santos Guerra, E. Boerner and E.A. Zimmer. 2004. Molecular phylogenetic evidence for the geographic origin and classification of Canary Island *Lotus* (Fabaceae: Loteae). *Molec. Phylogenet. Evol.* 32(1): 123-138. Maps, Molecular systematics.

Bailey, C.D., C.E. HUGHES and S.A. HARRIS. 2004. Using RAPDs to identify DNA sequence loci for species level phylogeny reconstruction: an example from *Leucaena* (Fabaceae). *Syst. Bot.* 29(1): 4-14. Molecular systematics.

Bernardello, G., R. AGUILAR and G.J. Anderson. 2004. The reproductive biology of *Sophora fernandeziana* (Leguminosae), a vulnerable endemic species from Isla Robinson Crusoe. *Amer. J. Bot.* 91(2): 198-206. Reproductive biology.

BEYRA MATOS, A., G. Reyes Artilles, L. Hernandez Valdez and P. Herrera Oliver. 2004. Revision taxonomica del genero *Canavalia* DC. (Leguminosae-Papilionoideae) en Cuba. (Taxonomic review of the Cuban *Canavalia* DC (Leguminosae-Papilionoideae) genus.) *Rev. Acad. Colomb. Cienc. Exact. Fis. Nat.* 28(107): 157-175. Icones, Maps, Anatomy and morphology, Keys.

BEYRA MATOS, A., G. Reyes Artilles and L. Hernandez Valdes. 2004. Sinopsis preliminar de los generos *Herpyza* C. Wright y *Dioclea* K. Kunth (Leguminosae-Papilionoideae) en Cuba. (Preliminary synopsis of the genera *Herpyza* C. Wright and *Dioclea* K. Kunth (Leguminosae: Papilionoideae) of Cuba.) *Rev. Acad. Colomb. Cienc. Exact. Fis. Nat.* 28(108): 313-322. Icones, Maps, Anatomy and morphology, Keys.

BEYRA MATOS, A. and G. Reyes Artilles. 2004. Revision taxonomica de los generos *Phaseolus* y *Vigna* (Leguminosae-Papilionoideae) en Cuba. *Ann. Jard. Bot. Madrid* 61(2): 135-154. Icones, Maps, Chromosome numbers, Anatomy and morphology, Keys.

BORTOLUZZI, R.L. de C., R.M. de Carvalho Okano, F.C.P. GARCIA and A.M.G. de TOZZI. 2004. Leguminosae, Papilionoideae no Parque Estadual do Rio Doce, Minas Gerais, Brasil: 2. Arvores e arbustos escandentes. (Leguminosae, Papilionoideae at Parque Estadual do Rio Doce, Minas Gerais, Brazil: 2. Trees and climbing shrubs.) *Acta Bot. Brasil.* 18(1): 49-71. Icones, Keys.

Brummitt, R.K. 2004. Report of the Committee for Spermatophyta: 55. Proposal 1584 on *Acacia*. *Taxon* 53(3): 826-829.

Burghardt, A. D., ESPERT, S. M. & R. H. Braun Wilke. 2004. Variabilidad genetica en *Prosopis ferox* Griseb. (Mimosaceae). *Darwiniana*, 42 (1-4).

Burghardt, A. D., ESPERT, S. M. & R. A. Palacios. 2004. La electroforesis de proteínas seminales como evidencia del origen híbrido de *Prosopis abbreviata* (Mimosaceae). *Boletín de la Sociedad Argentina de Botánica*, 39 (1-2): 83-87.

Christiansen, S.G. and N. Faurholdt. 2004. Krat-Vikke: en lyselskende skovplante. *URT* 28(2): 38-44. Icones, Maps.

Cortes Burns, H., B.D. SCHRIRE, R.T. PENNINGTON and A.G. Miller. 2004. A taxonomic revision of Socotran Indigofereae (Leguminosae - Papilionoideae) with insights into the phytogeographical links of the Socotran Archipelago. *Nordic J. Bot.* 22(6): 693-711. Maps, Anatomy and morphology.

Cuello A, N.L. 2004. A new vining species of *Swartzia* (Fabaceae, Swartzieae) from the Venezuelan Amazon. *Novon* 14(4): 420-423. Icones, Anatomy and morphology.

DELGADO SALINAS, A. and L. Torres Colin. 2004. New combinations in South American Phaseolinae: *Dolichopsis* and *Macropitilium* (Fabaceae: Phaseoleae). *Novon* 14(4): 424-427. 2 comb. nov.

- DELGADO SALINAS, A. and M. LAVIN. 2004. (1639-1640) Proposals to change the conserved type of *Phaseolus helvolus*, nom. cons. and to conserve the name *Glycine umbellata* with a conserved type (Fabaceae). *Taxon* 53(3): 839-841. Anatomy and morphology.
- DOYLE, J.J., J.L. Doyle, J.T. Rauscher and A.H.D. Brown. 2004. Diploid and polyploid reticulate evolution throughout the history of the perennial soybeans (*Glycine* subgenus *Glycine*). *New Phytol.* 161(1): 121-132. Chromosome numbers.
- Dickore, B. and K. Lewejohann. 2004. Ein Massenbestand der Gras-Platterbse (*Lathyrus nissolia* L.) bei Gottingen (MTB 4426/3). *Flor. Rundbr.* 37(1-2): 23-30.
- Dutech, C., H.P. Joly, and P. Jarne. 2004. Gene flow, historical population dynamics and genetic diversity within French Guianan populations of a rainforest tree species, *Vouacapoua americana*. *Heredity* 92(2): 69-77. Maps.
- Ekici, M. and T. Ekim. 2004. Revision of the section Hololeuce Bunge of the genus *Astragalus* L. (Leguminosae) in Turkey. *Turk. J. Bot.* 28(3): 307-347. Icones, Maps, Keys.
- Espert, S.M. and A.D. BURGHARDT. 2004. Electrophoretic analysis of seed proteins in Argentinian species of Phaseolinae (Fabaceae). *Bol. Soc. Argent. Bot.* 38(3-4): 311-317. Molecular systematics.
- ESTRADA, E., Carmen Yen M., Alfonso DELGADO S. and José A. Villarreal Q. 2004. Leguminosas del centro del estado de Nuevo León, México. *Anales del Instituto de Biología, Universidad Nacional Autónoma de México, Serie Botánica* 75(1): 73-85.
- ESTRADA C, A.E., J.A. Villarreal Q and E.M. Gonzalez. 2004. A new species of *Dalea* sect. *Parosela* (Fabaceae: Amorpheae) from Mexico. *Brittonia* 56(1): 67-71. Icones, Anatomy and morphology. *Dalea rupertii* sp. nov.
- ESTRADA, A.E. and M.A. Martinez. 2004. Los generos de leguminosas del norte de Mexico. (The genera of legumes of northern Mexico.) *Sida, Bot. Misc. no.25*: x, 134p. Icones, Chromosome numbers, Anatomy and morphology, Keys.
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